



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/682,005

10/08/2003

Masahiro Yoshida

199372005200

7733

7590 07/03/2007
MORRISON & FOERSTER LLP
555 West Fifth Street, Suite 3500
Los Angeles, CA 90013

EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
----------	--------------

1763

MAIL DATE	DELIVERY MODE
-----------	---------------

07/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/682,005

Applicant(s)

YOSHIDA ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3 and 5-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3 and 5-9 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 3, 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,982,006 to Boyers et al. in view of U.S. Patent No. 5,928,389 to Jevtic.

3. Boyers et al. disclose a substrate processing system in Figures 8 and 9 substantially as claimed and comprising: a plurality of first processing units (50A-E) that number N, each adapted to process a substrate by a first treatment (etch/clean) with a first processing fluid (ozonated water; column 36, rows 58-64), where N is a natural number not less than 3; at least one second processing unit (50A-E; column 38, rows 21-30; units not used for first treatment can be used for other treatments and are thus considered second processing units) adapted to process the substrates; and a supply device (ozone generator; column 10, rows 7-29 and column 38, rows 10-11) adapted to generate the first processing fluid to be supplied to the first processing units, the supply device having a capacity of supplying the first processing fluid to only N-n of the first processing units simultaneously at respective supply rates (column 38, rows 21-30), each supply rate complying with a demand for appropriately performing the first process

Art Unit: 1763

in each of the $N-n$ first processing units, where n is a natural number and $N-n$ is not less than 2; and a substrate conveyor (column 36, rows 60-62 and column 38, rows 38-40; industry standard cluster tools have a conveyor for accomplishing loading and unloading of substrates into process modules) adapted to convey the substrates and to load and unload the substrates into and from the first and second processing units; and a controller (column 38, rows 1-6 and 17-31) that controls a timing of loading of the substrates into the first processing units by the substrate conveyor so as to avoid a case where more than $N-n$ of the first processing units are simultaneously carrying out the first treatment with each using the first processing fluid, wherein the supply device is configured to generate the first processing fluid by converting at least one source fluid supplied to the supply device (Figure 1, column 9, row 57 through column 10, rows 49). The controller is configured to control the substrate conveyor so that the conveyor loads the substrates into the first processing units by turns at $T(N-n)$ intervals, where T is a time period necessary for carrying out the first treatment in each of the first processing units by using the first processing fluid (column 38, rows 46 and Table 17).

4. However, Boyers et al. fail to teach the controller is configured so that if any error or abnormality in the first treatment occurs in one of the first processing units, the controller changes the loading schedule such that the substrate conveyor loads the substrates into the first processing units other than said one of the first processing units after the error or abnormality, and the timing at which the substrate conveyor loads substrates into the first processing units is delayed after the error of abnormality occurs,

5. Jevtic teaches providing priority values to chambers in a multichamber processing tool wherein a substrate conveyor is controlled so that if an error or abnormality occurs (e.g. chamber offline for cleaning) in a single chamber of a group of chambers for performing the same processing, the single chamber is assigned an priority value which results in the chamber not being selected until it is back online and another of the equivalent chambers is selected. This type of control enables the tool to have improved throughput (abstract and column 14, rows 42-44). The timing will automatically be delayed if one of the normally dedicated chambers is not able to process as normally relied upon.

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided priority values to chambers in a multichamber processing tool wherein a

Art Unit: 1763

substrate conveyor is controlled so that if an error or abnormality occurs (e.g. chamber offline for cleaning) in a single chamber of a group of chambers for performing the same processing, the single chamber is assigned an priority value which results in the chamber not being selected until it is back online and another of the equivalent chambers is selected. This type of control is provided in order to enable the tool to have improved throughput as taught by Jevtic.

7. With respect to claims 6 and 8, the supply device is configured to generate the processing fluid from a first source fluid/oxygen and a second source fluid/nitrogen (column 10, rows 7-29).

8. With respect to claim 9, each of the first processing units is an ozone processing unit (column 8, rows 1-3) configured to process a substrate with a mixed fluid containing the first processing fluid and water vapor, the first processing fluid being ozone gas, and wherein the second processing unit is a cleaning/rinsing unit configured to clean/rinse the substrate having been processed by any one of the first processing units (column 38, rows 19-34 and Table 17).

9. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyers et al. and Jevtic as applied to claims 3, 6 and 8-9 above in view of U.S. Patent No 6,065,489 to Matsuwaka.

10. Boyers et al. and Jevtic disclose the invention substantially as claimed and as described above. At column 10, rows 7-29, it is described how the ozone gas created in an ozone generator using specific amounts of oxygen and nitrogen.

11. However, the structure of the ozone generator is not disclosed, that is flow control devices are not explicitly taught for oxygen, the first processing fluid and nitrogen, the second processing fluid.

12. Matsuwaka discloses an ozone generator for producing ozone gas using oxygen and nitrogen gases, wherein each is provided through a flow controller (12 and 4, respectively) for the purpose of controlled introduction and supply of the gases to the ozone generator as is commonly done in gas flow systems (column 1, rows 24-28). It is noted that the use of flow control devices in Boyers et al. would be even further obvious to one of ordinary skill in the art given that Boyers et al. teaches that the amounts of oxygen and nitrogen introduced into the ozone generator are strictly measured.

Art Unit: 1763

13. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided flow controllers for introducing oxygen and nitrogen gas into the ozone generator in Boyers et al. in order to control introduction and supply of the gases to the generator as taught by Matsuwaka.

14. With respect to Applicant's intended use recitation "so that the supply device supplies the first processing fluid at a flow rate corresponding to the sum of the demand for appropriately performing the first process in each of the first processing units performing the first process simultaneously", Boyers et al. teach that a stable supply is provided (column 10, rows 56-60) and that demand is always met (column 38, rows 9-67). However, it is also noted that the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Allowable Subject Matter

15. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or fairly suggest the controller further configured to change the loading schedule by setting a lengthened interval only between successive loading of substrates into two of the first processing units, while intervals between loadings of substrates into any two of the first processing units other than said two of the first processing units are kept unchanged. Further, no other properly combinable art was located that provided the missing teaching(s) and the requisite motivation.

Response to Arguments

Art Unit: 1763

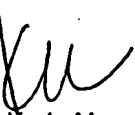
17. Applicant's arguments with respect to claims 3 and 5-9 have been considered but are moot in view of the new ground(s) of rejection. Jevtic has been relied upon as teaching the newly added recitations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore
Patent Examiner
Art Unit 1763
11 December 2006